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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,816	10/29/2003	Karl-Heinz Maus	1024943-000056	6775
21839 7590 03/09/2007 BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			EXAMINER ALEJANDRO, RAYMOND	
			ART UNIT 1745	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/694,816

Applicant(s)

MAUS ET AL.

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-11,13,14 and 16-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-11,13,14 and 16-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/13/07 has been entered.

This action is in response to the amendment filed in connection with the aforementioned RCE. Applicant has overcome the rejection under Section 102 over the WO'446. All other art rejections have not been overcome yet. Refer to specific details included in the rebuttal arguments and remarks of applicant's communication for more information. Thus, the present claims are again rejected over previously stated rejections as presented infra and for the reasons of record:

### ***Claim Disposition***

1. Claims 5, 12 and 15 have been cancelled.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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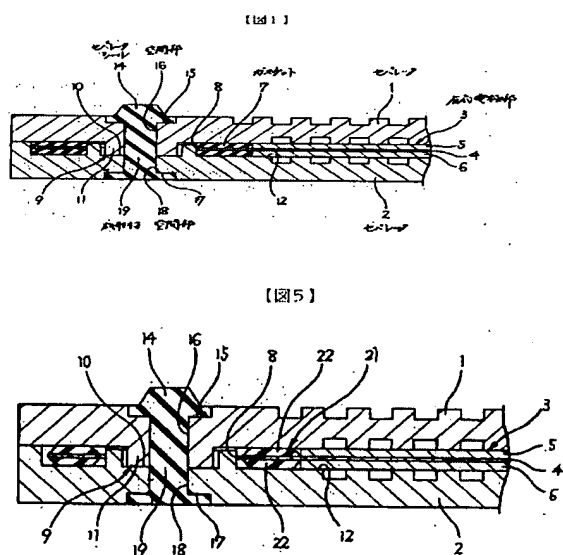
3. Claims 1-4, 6-11, 13-14, 16-18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by the Japanese publication JP 2001-338673 (hereinafter the JP'673).

The present claims are directed to a fuel cell arrangement wherein the disclosed inventive concept comprises the specific seal element.

As to claims 1 and 6:

The JP'673 discloses two or more separators 1, 2 being unified in a stack fashion by injection molding of a molding material 19 which consists of a rubber, a liquid rubber, or a thermoplastic elastomer (*all of the are polymeric materials*) (ABSTRACT). **Figure 7** illustrates the final fuel cell arrangement composed of multiple individual components being stacked together.

**Figures 1 and 5** below illustrate the specific fuel cell arrangement or configuration including plates 1 and 2 and a molding material 19 injected onto the plates to seal them so as to form a joined structure.

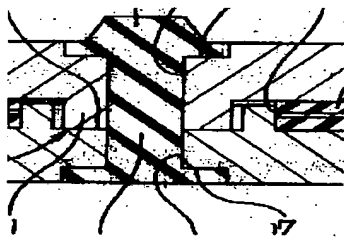


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As illustrated in **Figures 1 and 5** above, each plate 1, 2 has an opening or aperture and the seal element (reference numeral 19) extend therethrough (See also **enlarged portion of Figure 1** below). *In this instant, the cavity having the seal may be either the upper portion of plate 1, or the lower portion of plate 2, or the interface portion between plates 1 and 2.*

As to claims 2-4, 9-11 and 14:

Molding material 19 (the seal element) is disposed on the main surfaces of the stack and the seal element encompasses end faces of the plates (See **Figures 1 and 5**). Plates 1 and 2 are placed immediately adjacent one another and there is an empty space therebetween (See **enlarged portion of Figure 1** below).



As to claims 14:

As illustrated in **Figures 1 and 5** above, each plate 1, 2 has an opening or aperture and the seal element (reference numeral 19) extend therethrough (See also **enlarged portion of Figure 1** below). *In this instant, the cavity having the seal may be either the upper portion of plate 1, or the lower portion of plate 2, or the interface portion between plates 1 and 2.*

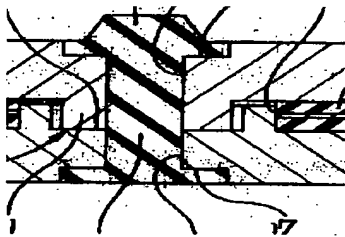
As to claim 7:

The JP'673 discloses using a molding material 19 which consists of a rubber, a liquid rubber, or a thermoplastic elastomer (*all of the are polymeric materials*) (ABSTRACT). *It is noted that these polymeric materials exhibit adhesive properties (one of the polymeric material more adhesive than the other).*

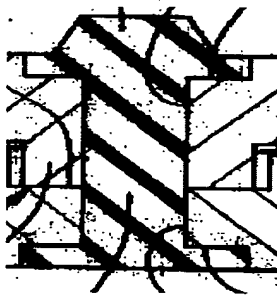
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As to claims 8 and 13:

**Enlarged portion of Figure 1** below depicts the interlocking configuration between the molding material 19 and the plates, as well as between the plates. *The space where the molding material 19 is specifically disposed corresponds to respective plates opening overlapping each other.*

As to claims 16-18:

**Further enlarged portion of Figure 1** below shows a molding material 19 being progressively narrowed toward the upper end (tapered structure) and having flat surfaces at either side thereof.

As to claim 20:

The JP'673 discloses two or more separators 1, 2 being unified in a stack fashion by injection molding of a molding material 19 which consists of a rubber, a liquid rubber, or a thermoplastic elastomer (*all of the are polymeric materials*) (ABSTRACT). *Thus, the process of producing the module for the fuel cell arrangement is inherently disclosed by the JP'673.*

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Consequently, the present claims are anticipated.

4. (At least) Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by applicant's admission of prior art (herein called the AAPA) *(refer to applicant's specification at paragraph 0005)*. As discussed by the applicant on page 10 of the amendment dated 02/13/07, the AAPA makes reference to EP 1032065 which corresponds to US 6338492 to Schilling et al. Thus, for purposes of art discussion, certain features illustrated in Figures 1-2 and 5B of US'492 are being incorporated herein.

In paragraph 0005 of applicant's specification, the AAPA discloses a seal arrangement especially for bipolar plates with interposed ion exchange membrane units in fuel cells wherein seal elements of the polymer material are injected into the recesses of the bipolar plates and with the pertinent bipolar plate, form an integral unit (Applicants' specification at paragraph 0005).

Reference numerals 2, 3 are bipolar plates; reference numeral 4 is a membrane electrode assembly including respective catalyst materials (COL 3, lines 39-50/FIGURES 1-2); and reference numeral 10 is a polymeric seal disposed through hole 19 (COL 4, lines 23-35/FIGURES 5B). Sealing element 10 is made of an elastomeric material and is injected therein (COL 3, lines 39-60).

Fig. 2

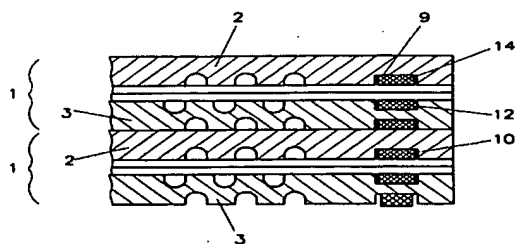


Fig. 1

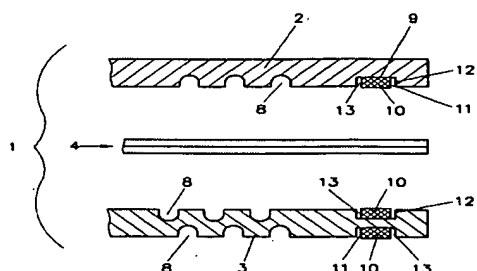
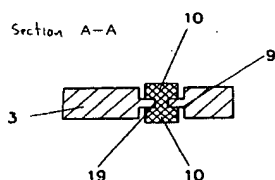


Fig. 5B



Accordingly, the present claims are anticipated.

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Japanese publication JP 2001-338673 (hereinafter the JP'673) and/or b) applicant's admission of prior art (herein called the AAPA) (*refer to applicant's specification at paragraph 0005*) as applied to

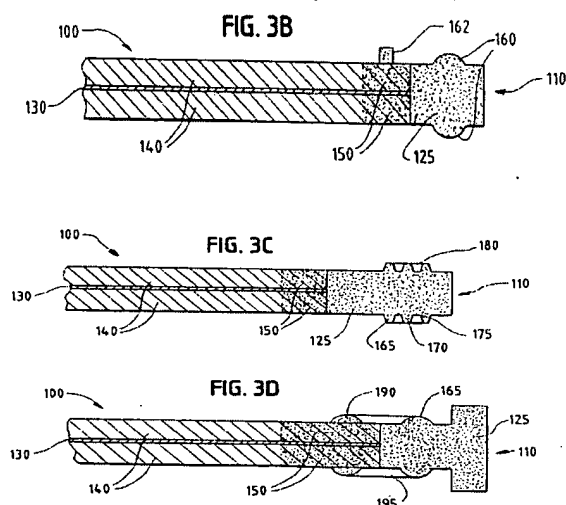


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claims 6 or 18 above, and further in view of the publication WO 99/04446 (herein called the WO'446).

The JP'673 and/or the AAPA are applied, argued and incorporated herein for the reasons expressed above. However, none of the preceding references expressly disclose the specific seal having recesses.

The WO'446 shows in **Figures 3B-D** below seal elements comprising tapered structures and flat surfaces. Specifically, **Figure 3C** does show the flat surface being separated from the tapering surface by a recess.



In view of the above, it would have been obvious to a POSITA at the time the invention was made to use the specific seal having recesses of the WO'446 in the fuel cell arrangement of the JP'673 and/or the AAPA because the WO'446 discloses that seals having such a specific configuration provide compartmentalized seals that furnish improved protection against fluid leaks in a fuel cell assembly. Thus, it does provide enhanced leaking protection.

***Response to Arguments***

7. Applicant's arguments filed 02/13/07 have been fully considered but they are not persuasive.

8. Applicant's arguments, see the amendment, filed 02/13/07, with respect to the rejection under Section 102 over the WO'446 have been fully considered and are persuasive. The rejection of claims 1, 6 and 20 has been withdrawn.

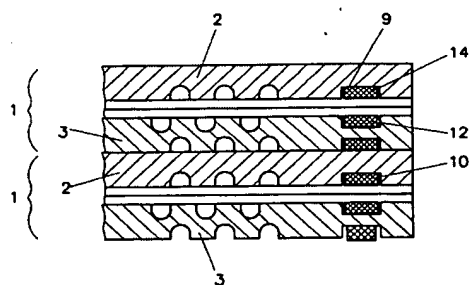
9. Applicant's main contention against the rejection based on the JP'673 is grounded on the assertion that *"neither separator plate 1 or 2 comprises first and second stacked plates directly contacting each other"* and that *"according to the structure of Kuroki, the oppositely facing surfaces of the separator plates 1 and 2 would contact another separator plate...The oppositely facing surfaces of the separator plates 1 and 2 would not contact respective catalyst plates..."*. In reply, the examiner avers that applicant is overlooking the fact that separator plates 1 and 2, when taken together or in combination (not individually or singly as implied by the applicant), meet the claimed requirement of *"being comprised of first and second stacked plates...directly contacting one other..."*. Note that applicant has admitted that the separator plates contact each other (see amendment dated 02/13/07 on page 9, 1<sup>st</sup> full paragraph). Now, applicant's argument that *"The oppositely facing surfaces of the separator plates 1 and 2 would not contact respective catalyst plates..."* is not sufficient to overcome the rejection because the present claims do not specify what kind of "contact" is ultimately intended by the applicant. That is to say, it is not well established whether applicant's stacked plates: a) electrically contact respective catalyst plates, or b) directly contact (in direct physical contact) respective catalyst plates, or c) operatively contact (promoting a suitable operating condition) respective catalyst plates.

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Therefore, based on such an uncertainty and the broadness of the claimed invention, the examiner of the view that the teachings of the JP'673 still do anticipate the inventive concept of applicant.

10. As far as applicant's arguments traversing the rejection of the AAPA (or Schilling et al'492), it has been advanced that *"the bipolar plates 2 and 3 of Schilling et al do not each comprise first and second stacked plates"* and that *"the opposing surfaces of the plate 2 and 3 do not contact respective catalyst plates"*. In response to the former, the examiner simply replies that that applicant is overlooking the fact that bipolar plates 2 and 3, when taken together or in combination (not individually or singly as implied by the applicant), clearly meet the structural requirement of *"being comprised of first and second stacked plates...directly contacting one other..."*. **Figure 2** below clearly illustrates so.

Fig.2



In response to the latter, the position taken by the Examiner above with respect to that argument, also argued against the JP'673, is found to apply equally in this case and in view of the teachings of the AAPA (Schilling et al'492). In other words, it is not well established whether applicant's stacked plates: a) electrically contact respective catalyst plates, or b) directly contact (in direct physical contact) respective catalyst plates, or c) operatively contact

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(promoting a suitable operating condition) respective catalyst plates. Therefore, based on such an uncertainty and the broadness of the claimed invention, the examiner of the view that the teachings of the AAPA (Schilling et al'492) still do anticipate the inventive concept of applicant.

11. Next, with respect to the JP'673, applicant takes the position that the foregoing reference *"does not disclose an electrode comprised of two plates connected by a sealing element as recited in Claims 1 and 6. Rather, this document discloses several electrodes connected by a sealing element, but the individual electrodes are not composed of two plates"* because *"each of the separators is one piece and is thus not composed of two plates as claimed"*. In this respect, applicant appears to be unaware of the difference between the transitional terms "*comprised*" (as presently claimed) and "*composed*" (as presently argued). The former being open-ended language while the latter being close-ended language. See ***MPEP 2111.03 Transitional Phrases***. Certainly, applicant's claimed invention does not exclude unspecified elements as apparently advanced by the applicant. Each of applicant's independent claims 1, 6 and 20 recites the transitional term "*comprising*" which is open terminology, not closed terminology.

12. Even assuming arguendo that applicant did not intend to invoke closed-terminology as part of his arguments, the examiner strenuously disagrees with applicant's assertion that *"each of the separators (separators 1, 2) is one piece"*. In view of Figure 7 of the JP'673, which illustrates stacking together multiple pair of separators each pair forming a single unit, the examiner contends that separators 1, 2 represent a unique combination of two stacked plates, paired together, to constitute a single-individual fuel cell component as instantly claimed and disclosed by the applicant. In other words, separators 1, 2 of the JP'673 constitute an individual component per se in the same manner that applicant's individual component is comprised of two stacked

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plates. Thus, the prior art's combined separator plates are a structural equivalent of the corresponding stacked plates claimed in the instant invention.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro  
Primary Examiner  
Art Unit 1745



RAYMOND ALEJANDRO  
PRIMARY EXAMINER